

## REMARKS

In the Office Action, the Examiner rejected Claims 8, 9, 11, 12, 14, 15 and 17-22, which were all of the then pending claims, under 35 U.S.C. 101 as directed to non-statutory subject matter. Claims 8, 9, 11, 12 and 14-20 were further rejected over the prior art. In particular, Claims 8, 11 and 14 were rejected under 35 U.S.C. 102 as being fully anticipated by U.S. Patent 6,044,361 (Kalagnanam, et al.), and Claims 9, 12, 15 and 20 were rejected under 35 U.S.C. 103 as being unpatentable over Kalagnanam, et al. in view of U.S. Patent 4,459,663 (Dye). In addition, Claims 17-19 were rejected under 35 U.S.C. 103 as being unpatentable over Kalagnanam, et al; and Claims 8, 11, 13, 14 and 16-19 were rejected under 35 U.S.C. 103 as being unpatentable over a document titled "Production Planning and Scheduling" (ACESITA).

Claims 21 and 22 were not rejected over the prior art.

Applicants are herewith filing a Request for Continued Prosecution (RCE) to continue the prosecution of this application. The present Amendment is being submitted to amend independent Claims 8, 11 and 14 to better define the subject matters of these claims. Claim 22, which is dependent from Claim 8, is being amended to keep the language of Claim 22 consistent with the language of Claim 8.

For the reasons discussed below, Claims 8, 9, 11, 12, 14, 15, 17-20 are directed to statutory subject matter and all of Claims 8, 9, 11, 12, 14, 15 and 17-22 patentably distinguish over the prior art and are allowable. Accordingly, the Examiner is respectfully requested to reconsider and to withdraw the rejections of Claims 8, 9, 11, 12, 14, 15 and 17-22 under 35 U.S.C. 101, the rejection of Claims 8, 11 and 14 under 35 U.S.C. 102, the rejection of Claims 9, 12, 15 and 20 under 35 U.S.C. 103, and to allow Claims 8, 9, 11, 12, 14, 15 and 17-22.

The rejection of Claims 8, 9, 11, 12, 14, 15 and 17-22 under 35 U.S.C. 101 is respectfully traversed because these claims are directed to statutory subject matter under 35 U.S.C. 101.

The Examiner, in the Office Action, argued that claims 8, 9, 11, 12, 14, 15 and 17-22 are non-statutory because they are not concrete and tangible, and no result or output is presented – rather data is just manipulated.

Applicants respectfully disagree. All of these claims are directed to useful, tangible processes or apparatus. Moreover, these claims provide a specific result – allocating finished units to received customer orders. This is a practical, tangible and useful output. The instant invention effectively addresses a number of difficult factors involved in this allocation. These difficult factors include different customer requirements and imperfections in the finished units.

Each of the Claims 8, 11 and 14, which are all independent claims, expressly describes specific, concrete, physical elements. In particular, each of these claims describes finished units in a production facility, and orders from customers. These claims do not describe merely an abstract idea. Instead, these claims, set forth specific functions and feature and describe how those functions and features are used to achieve a specific, practical result – allocating those finished units to those customer orders.

In order to help obviate this issue, Claims 8, 9, 17 and 20-22, which are directed to a method for allocating finished units, are being amended to indicate expressly that this method is a computer implemented method. Thus, these claims not only describe a practical, tangible and useful result, but also expressly include a physical, tangible element - a computer - to achieve those results.

For the reasons set forth above, the independent Claims 8, 11 and 14 and the dependent Claims 9, 12, 15 and 17-22 are directed to statutory subject matter under 35 U.S.C. 101, and the Examiner is thus respectfully requested to reconsider and to withdraw the rejection of these claims as non-statutory.

In addition, all of these claims also patentably distinguish over the prior art because the prior art does not disclose or suggest the defect map or the use of that defect map in the process of assigning finished units to orders, as described in independent Claims 8, 11 and 14.

In order to best understand this feature, and the significance of the feature, it may be helpful to review briefly the present invention and the prior art.

The present invention, generally, relates to allocating materials in a production facility to customer orders. An important aspect of the invention is that it takes into account defects on the surface of a piece of material and the customer requirements. In particular, for each of the finished units, an associated surface defect map is created to indicate the location of defects in that finished unit and characteristics of those defects. These defect maps are then used to search for the largest area in each of the finished units that can be assigned to each order. The preferred embodiment of the instant invention will allocate and reallocate orders to precise regions of coils (material) so that the minimum quality of an order is not violated while also minimizing waste of material.

The preferred material reallocation algorithm of the present invention starts by listing all incomplete orders by due dates. Going down the list, the algorithm assigns incomplete orders to available areas of the coils (pieces of material). If no available area is found, the algorithm identifies which is the smallest order that can be unassigned in order to open space for the

incomplete order. The algorithm continues doing this until all orders are completed, or no more options of reallocation are found.

The prior art does not show or suggest the use of defect maps in the above-described way.

For example, Kalagnanam, et al. discloses a computer implemented inventory matching method based on multiple assignments per iteration. This method has four major steps. In the first step, a feasible solution is created by applying an iterative bipartite matching on a given initial solution. The second step involves improving the solution by solving a max flow problem; and in the third step, a multi-key sort is used to identify undesirable matches in a given feasible solution. The fourth step is to backlift the solution by removing the undesirable matches from the feasible solution.

The present invention is different. Instead of identifying multiple solutions, the instant invention processes the customer orders, using the defect maps, to identify one solution. During this processing, orders are assigned and then may be unassigned.

Independent Claims 8, 11 and 14 are herein being amended to describe the use of the defect map in more detail. In particular, Claims 8 and 11 describe the steps of, for each of the finished units, creating an associated surface defect map indicating the locations of defects in said each finished unit and characteristics of said defects, and using these defect maps to search for the largest area in each of the finished units that can be assigned to each order.

Claim 11 is directed to a system for allocating finished units to orders received from customers for those units. Claim 11, as presented herewith, positively sets forth means for creating, for each of the finished units, an associated surface defect map indicting the locations of defects in said each finished unit and characteristics of said defects, and means for using those

defect maps to search for the largest area in each of the finished units that can be assigned to each order.

The other references of record have been reviewed, and these other references, whether considered individually or in combination, also do not disclose or suggest this feature of the invention.

ACESITA describes preliminary ideas of the present invention. An important feature of the ACESITA system is the capacity of considering the current conditions of a piece of material and verifying what further manufacturing steps are necessary to transform that material so that it will fit an order. ACESITA does not disclose, though, the use of a defect map, as described above, in the allocation and reallocation of orders to precise regions of coils (materials) so that the minimum quality of an order is not violated while minimizing waste of material.

Dye deals with allocating quantity of material to manufacturing orders in a discrete manufacturing production line, without simulating the different manufacturing options that material could be submitted in order to be manufactured. The present invention goes further and is concerned with the geometrical constraints of the defects and of the order requirements, not discrete manufacturing.

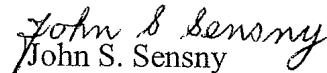
Because of the above-discussed differences between Claims 8, 11 and 14 and the prior art, and because of the advantages associated with those differences, Claims 8, 11 and 14 patentably distinguish over the prior art and are allowable. Claims 9, 17 and 20-22 are dependent from Claim 8 and are allowable therewith. Also, Claims 12 and 18 are dependent from Claim 11 and are allowable therewith; and Claims 15 and 19 are dependent from, and are allowable with, Claim 14. The Examiner is accordingly, respectfully asked to reconsider and to withdraw the rejections

of Claims 8, 11 and 14 under 35 U.S.C. 102, and the rejections of Claims 8, 9, 11, 12, 14, 15 and 17-20 under 35 U.S.C. 103, and to allow Claims 8, 9, 11, 12, 14, 15 and 17-22.

For the reasons advanced above, the Examiner is respectfully requested to reconsider and to withdraw the rejections of Claims 8, 9, 11, 12, 14, 15 and 17-22 under 35 U.S.C. 101, the rejection of Claims 8, 11 and 14 under 35 U.S.C. 102, and the rejection of Claims 8, 9, 11 and 13-20 under 35 U.S.C. 103, and to allow Claims 8, 9, 11, 12, 14, 15 and 17-22.

If the Examiner believes that a telephone conference with Applicants' Attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully Submitted,

  
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Attachment: Request for Continued Examination (RCE)